

SINILIN, V.V.; VASIL'YEV, I.I.

Viscous properties of lubricants and energy losses in roller bearings.
Khim. i tekhn. topl. i masel 10 no.9:50-53 S '66. (MIRA 18:9)

1. Moskovskiy avtomobil'no-dorozhnyy institut imeni Molotov.

22

CA

Viscosity-temperature properties of lubricants. (G. V. Vinogradov and V. Y. Shulayev (Petrozium Inst., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 26, 85-8 (1953).—On the example of solidol, it is shown that there exists a linear relation between $\log \tau/\dot{\gamma}$ (where τ = shearing stress at the wall of the capillary, $\dot{\gamma}$ = mean rate of shear, $\tau/\dot{\gamma}$ = effective viscosity) and $\log \eta$ (viscosity of the medium, spindle oil) at the given temp. the question is whether the effect of the temp. on the lubricating properties of a grease is detd. entirely by its effect on η , and to what extent other properties of the medium play a role. Viscometric measurements are reported on 3 greases, prepd. by thickening with 10% Li stearate of 3 different mineral oils of different η . Flow curves ($\log D$ as a function of $\log \tau$) become increasingly less steep, and more variable with the temp., as η and D are increased. At low τ , irreversible disruption of the structure skeleton of the lubricant is predominant, with the viscous flow of the fragments and their orientation being subdominant; their role increases with increasing τ , and so does the viscous flow of the medium. A more viscous medium enhances the orientation effect, and this lowers the resistance of the structure skeleton to deformation. This lessens of the thickening effect of

the disperse phase (the soap) partially compensates the increase of the viscosity with falling temp., and this accounts for the relatively small temp. dependence of the lubricating properties, as compared with the strong temp. dependence of η . Lines of $\log \eta$ (relative viscosity) as a function of $\log \tau$ at different temps. are nearly parallel for the different samples, and lie higher for lubricants prepd. with lighter oils. The same line at const. temp. (20°), i.e. as a function of $\log \eta$ varied only through variation of the oil used as dispersion medium, intersects the other $\log \tau$ lines. This means that the effect of a variation of η through variation of the temp. is not identical with a variation of the medium. A plot of $\log \tau$ as a function of $\log \eta$, for 11 different greases prepd. with oils of η varying by a factor of 170, is one single straight line, irrespective of the different chem. nature of the media. Properties of the medium other than η have, consequently, only a secondary importance. N. Thom

VINOGRADOV, G. V., SINITSYN, A. V.

Lubrication and lubricants

Viscous properties of sodium lubricants and the influence of the capillary effect on their flow. Dokl. AN SSSR 86, No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress
December 1952. UNCLASSIFIED.

Subreaction + Friction

2194* On the Near-the-Wall Effect and Viscosity-Tem-
perature Properties of Na-Lubricants. (Russian.) V. V.
Makarov and G. V. Vinogradov. Doklady Akademii Nauk SSSR,
v. 91, no. 2, July 11, 1963, p. 315-317.

With homogenization the viscosity of the lubricant decreases
and reciprocal granular movement is facilitated. Tables, graphs.
4 ref.

6-10-57
JP

SINITSYN, V. V.

The wall effect and viscosity-temperature properties of sodium greases. V. V. Sinit'syn and G. V. Vinogradov. *Doklady Akad. Nauk S.S.S.R.* 91, 323-6 (1953); cf. C.A. 88:104. --The majority of soap and hydrocarbon greases are distinguished by a macro or micro grainy structure. Vi-cometric investigation is possible if the dimensions of grain are considerably less than R , capillary radius. When $L/2R \approx 60$ (where L is length of capillary and R a const. radius) the results are independent of L . In well-developed grainy greases the relatively large dimensions of grains and their higher stability impedes the development of laminar flow with increase in shearing stress at the capillary wall. "Slippage" of the disperse system takes place because the wall layers present relatively less resistance to formation than does the interior of the mass, where resistance to flow is tied up with stirring of grains and their disintegration. With decrease of size of grain (homogenization) the viscosity of grease decreases, and the role of intergranular material and dispersing phase increases. Correspondingly the wall effect is reduced and the curves of flow become invariant. Effect of wall slippage depends first of all on bulk properties and structure of the system.

V. N. Bednarski

10-13-54
JYP

SINITSYN, V. V.

Dissertation: "Viscous Properties and Wall Sliding of Plastic Lubricants." Card Tech
Sci, Inst of Petroleum, Acad Sci USSR, 20 May 54. Vechernyaya Moskva, Moscow, 11 May 54.

SO: SUM 284, 26 Nov 1954

SINITSYN, V. V.

AID P - 1139

Subject : USSR/Chemistry

Card 1/1 Pub. 78 - 17/25

Authors : Klimov, K. I., Sinitsyn, V. V. and Aleyeva, Ye. A.

Title : Colloidal stability of consistent lubricants

Periodical : Neft. khoz., v. 32, #11, 62-67, N 1954

Abstract : The dependence of the colloidal stability of lubricants on their soap-content and on the viscosity of oil used in their preparation was investigated. The KSA apparatus (GOST 7142-54) was used in the experiments. Four tables, 3 charts and 6 Russian references (1938-1953).

Institution : None

Submitted : No date

SINITSYN, V. V.

5
1-4E3d.

192t. STABILITY OF GREASES IN STORAGE. Sinitsyn, V.V., Alagta, E.V.
and Klimov, K.I. (Nov. Ref. Tekh. Nefteprosobr. (News-Petrol. Tech.,
Moscow). 1955, (6), 50-56; abstr. in Ref. Zh. Khim. (Ref. J.)

Chern. Moscow, 1956, (22), (44):
different conditions of storage.

GMP
MT

SINITSYN, V.V.; VINOGRADOV, G.V.

Viscous properties of hydrocarbon lubricants. Koll.shur. 17
no.3:255-260 My-Je '55. (MLRA 8:8)

1. Institut nefti Akademii nauk SSSR, Moskva.
(Lubrication and lubricants) (Viscosity)

AID P - 1578

Subject : USSR/Chemistry

Card 1/2 Pub. 152 - 8/21

Authors : Vinogradov, G. V., Nechitaylo, N. A., Sinitsyn, V. V.,
and Aleksashin, V. I.

Title : Study of the structure of plastic lubricants with an
electron microscope

Periodical : Zhur. prikl. khim., 28, no.1, 52-64, 1955

Abstract : Commercial lubricants prepared from synthetic fatty acids
studied with an electron microscope did not show a
definite structure. It may be assumed that the dispersed
phase of these lubricants consists of very small
microcrystallites with an imperfect crystalline lattice.
In Na-lubricants made from castor oil, and from cotton
seed oil, ring-shaped soap particles were detected. In
the dispersed phase of Na-Ca-lubricants, the coexistence
of two solid phases, Na- and Ca-soaps, was detected.
Al- and Li-lubricants were also studied. Seventeen

Zhur. prikl. khim., 28, no.1, 52-64, 1955

Card 2/2 Pub. 152 - 8/21

photos, 16 references (5 Russian: 1939-53)

Institution: None

Submitted : F 23, 1954

SINITSYN, V. V.; Konstantinov, A. A. ; Vinogradov, G. V.

"Viscosimetry of Dispersed Systems at Variable Speeds of Deformation"
(Viskozimetriya dispersnykh sistem pri peremennykh skorostyakh deformatsii)
from the book Trudy of the Third All-Union Conference on Colloid Chemistry
pp. 113-120, Iz. AN SSSR, Moscow, 1956

(Report given at above Conference, Minsk, 21-24 Dec 53)

SOV/124-58-3-3093

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 3, p 78 (USSR)

AUTHOR: Sinitsyn, V. V.

TITLE: Viscosity Properties of Plastic Disperse Systems and the Boundary Slippage Effect (Vyazkostnyye svoystva plastichnykh dispersnykh sistem i effekt pristennogo skol'zheniya)

PERIODICAL: V sb.: Tr. 3-y Vses. konferentsii pokolloid. khimii, 1953, Moscow AN SSSR, 1956, pp 127-143

ABSTRACT: The article describes a capillary type viscosimeter designed for the study of the boundary slippage effect (BS effect) for lubricating greases. Glass and copper capillary tubes of various diameters (from 0.1 to 0.6 mm) and lengths (6.8 to 80 cm) have been used in the investigations. The BS effect has been studied for the sodium and calcium base greases, and for the greases of the specifications GSA and GOI-54. The article presents curves showing the variation of the effective velocity gradient D_{eff} , as calculated by the volume of grease passing through the capillary tube, with the shear stress τ . The curves demonstrate the dependence of the value of D_{eff} on the radius R of the capillary tube, which is explained by the boundary slippage effect. The

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SOV/124-58-3-3093

Viscosity Properties of Plastic Disperse Systems (cont)

equation giving the relationship is as follows:

$$D_{\text{eff}} = D_{\text{vol}} + \frac{k(\tau - \tau_0)}{R}$$

where D_{vol} is the average volumetric velocity gradient, τ_0 is the ultimate stress in the boundary layer at the wall, and k is a constant characterizing the viscosity properties of a grease. The article presents curves which demonstrate the volumetric flow properties of the above-mentioned greases at different temperatures. It has been found that anomalies in viscosity properties are more pronounced in the inner layers than in the boundary layers. Comparison of the viscosity vs. temperature characteristics of the inner and the boundary layers has shown that the value of k drops faster with a temperature increase than the value of the viscosity of the inner layers. It has been observed that homogenizing of some greases reduces the BS effect considerably. Bibliography: 18 references.

N. I. Malinin

Card 2/2

32-7-22/49

AUTHOR: Sinitsyn, V. V.

TITLE: The Determination of the Specific Weight of Solid Lubricating Oils
(Opredeleniye udel'nogo vesa konsistentnykh smazok)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 7, pp. 828 - 829 (USSR)

ABSTRACT: In this paper the author declares that there are no methods to determine the specific weight of plastic lubricating oils, and therefore such a method is suggested here, which is described in the following. A little tube (20 x 70 mm) the volume of which has been determined with accuracy, is placed in a vertical position upon a glass plate after its edge has been ground so as to be even and smooth. Points of contact are sealed capillarily by means of liquefied paraffin. The entire system is heated up to a temperature of 50° - 60°. The little tube is then filled with the oil to be investigated and is removed from the glass plate. On both ends of the tube, on which there are bulges of oil, rubber caps are fitted. The tube is further dipped into a thermostated bath at $\pm 0,1^\circ$. After one hour the tube is taken out of the bath and the cap is removed. The bulges of oil on both ends are cut off and weighed. It is found on this occasion that the specific weight

Card 1/2

32-7-22/49

The Determination of the Specific Weight of Solid Lubricating Oils

determined in this way cannot show an error of more than 7 %. There is 1 figure and 2 tables.

ASSOCIATION: Scientific Research Institute for Combustible Lubricants
(Nauchno-issledovatel'skiy institut goryuche-smazochnykh materialov)

AVAILABLE: Library of Congress

Card 2/2

SOV/65-58-11-11/15

AUTHORS: Sinitzyn, V. V.; Gol'din, S. A.; Vinogradov, G. V. and
Sentyurikhina, L. N.

TITLE: Electromicroscopic Investigations of the Structure of Consistent
Greases Made From Synthetic Acids (Elektronmikrosko-
picheskoye issledovaniye struktury konsistentnykh smazok
na sinteticheskikh kislotakh)

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr 11,
pp 51 - 58 (USSR)

ABSTRACT: At present, lubricating oils and greases are made from
synthetic acids which are prepared by the oxidation of
paraffin. Their characteristics differ from those of
lubricating oils made from edible oils, especially in
their thixotropic properties, which is due to their
different structures. A microscope EM-3 was used dur-
ing the investigations on samples prepared according to
the method described by G. V. Vinogradov (Ref.13).
The samples were suspended in petroleum ether (1:200)
and maintained in the solvent for a period varying from
a few minutes to three months. In some cases benzene,
toluene, carbon tetrachloride, dichloroethane and ethyl
alcohol were used as solvents. Samples were heated to
55 - 65°C when lubricants were made from synthetic acids

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SOV/65-58-11-11/15

Electromicroscopic Investigations of the Structure of Consistent Greases Made From Synthetic Acids

containing a small amount of unsaponified matter. Anhydrous lithium and calcium lubricants (greases) and also commercial synthetic greases were tested. Lithium and calcium lubricants, made from individual fatty acids, were also prepared for comparative tests. A method was developed for investigating the structure of the suspension of individual hard hydrocarbons (paraffins) in organic solvents. White Drogobych paraffin with a melting point of 52°C was subjected to oxidation under laboratory conditions until the acid number equalled 70 mg KOH; this operation lasted 18 - 24 hours. The lithium lubricants were prepared from acid fractions of $\text{C}_{14}\text{H}_{28}\text{O}_2$ acids and from mixtures of $\text{C}_{16}\text{H}_{32}\text{O}_2$ and

$\text{C}_{18}\text{H}_{36}\text{O}_2$ acids. The calcium lubricants were prepared from the same fractions and also from $\text{C}_{18}\text{H}_{36}\text{O}_2$ acids. Lithium fractions had a similar structure as commercial lubricants thickened with lithium stearate, and only differed from the latter by the degree of dispersion of needle-shaped soap crystallites which are formed in the dispersed phase (Figs. 1 and 2). The dispersed

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MOV/65-58-11-11/15

Electronmicroscopic Investigations of the Structure of Consistent Greases Made From Synthetic Acids

phase of calcium lubricants, thickened with soaps of synthetic acids (Figs. 3-5), is formed by laminar particles. Unsaponified substances influence the dimensions and forms of the original particles of the thickening agent. The flat band and laminar particles which form the structure of commercial synthetic greases (Fig. 6) can be broken up easily by mechanical action. The low mechanical stability of synthetic greases is obviously influenced by the brittleness of the crystallites. The sharp difference in the structure of calcium lubricants made from synthetic acids and from edible oils explains the difference in their mechanical properties. It was also shown that anhydrous calcium lubricants, thickened with lithium stearate, have a similar structure as calcium lubricants for which synthetic acids with nearly equal molecular weight (the fraction $C_{18}H_{36}O_2$) have been used as thickening agents; the latter contained water but no unsaponified or polar compounds. A method is described for the electronmicro-

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SOV/65-58-11-11/15

Electronmicroscopic Investigations of the Structure of ~~Existing~~ Greases Made
From Synthetic Acids

photography of microcrystallites of solid paraffins
crystallized out from organic solvents. There are 9
Figures, 15 References: 11 Soviet, 1 French and 3 English.

Card 4/4

SINITSYN, V.V.; KLIMOV, K.I.; ALEYEVA, Ye.V.

Solloidal stability of lithium lubricants and effect of dispersion
media on this stability. Zhur. prikl. khim. 31 no.8:1202-1210 Ag '58.
(MIRA 11:10)

(Lubrication and lubricants) (Colloids)

Синицын, В. В.

SOV/5055

PHASE I BOOK CAPTIONING

Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh. 3d, 1958.

Oldrodinamicheskaya teoriya smazki. Opory skol'zheniya. Smazka i smazochnyye materialy (Hydrodynamic Theory of Lubrication, Slip Bearings. Lubrication and Lubricant Materials) Moscow, Izd-vo AN SSSR. 422 p. Errata slip inserted. 3,800 copies printed. (Series: Ita: Trudy, V. 3)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Eds. for the Section "Hydrodynamic Theory of Lubrication and Slip Bearings": A. K. P'yachkov, Professor, Doctor of Technical Sciences, and A. K. P'yachkov, Professor, Doctor of Technical Sciences; and Ed. for the Section "Lubrication and Lubricant Materials": G. V. Vinogradov, Professor, Doctor of Chemical Sciences; Ed. of Publishing House: M. Ya. Kisebanov; Tech. Ed.: O. M. Ous'kova.

Purpose: This collection of articles is intended for practicing engineers and research scientists.

Coverage: The collection published by the Institut mashinovedeniya AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines) which was held April 9-15, 1958. Problems discussed were in the field of hydrodynamic theory of lubrication and wear.

SOV/5055

Podolskiy, Yu. Ya. Machine for Testing Wear-Resistant and Antifriction Properties of Lubricants at High Contact Stresses and Sliding Speeds	227
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Machchenkov, S. M. Practical Significance of Some Laboratory Parameters of the Mechanical Properties of Plastic Lubricants	270
Pavlov, V. P. Effects of Heat on the Flow of Plastic Lubricants	277
Sinitsyn, V. V. Boundary-Layer Sliding and Internal Friction of Plastic Lubricants	284

28(5)
 AUTHORS: Sinitzyn, V.V., Papok, K.K., Zuseva, B.S. SOV/32-25-11-34/69
 TITLE: Method for the Classification of the Volatility of Plastic Lubricants
 PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 11, pp 1349-1351 (USSR)
 ABSTRACT: A number of methods of lubricant quality control used at present possess a low reproducibility. An accelerated method based on the measurement of the loss in weight of a lubricant sample has been developed. The latter is applied to a standard vaporizer (diameter 21.4 mm) (GOST 5737-53) in a layer of 1 mm thickness and kept for 1-3 hours in a special thermostat at a certain temperature. A thermostat with film formation as it is normally used for the volatility determination of oils was used (Ref 1). Vaporizers with ring-shaped shelves (Fig 1) were used besides standard vaporizers. The TsiATIM-201 lubricant was tested and it was found that the weighed portions are different in the case of different vaporizers, which is also reflected in the volatility measurements (Fig 2). A satisfactory reproducibility of the measurement results is achieved with weighed portions of the same or fuels and

Card 1/2

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S/081/61/000/017/151/166
B117/B110

11.9000
AUTHOR:

Sinitsyn, V. V.

TITLE:

Gliding of plastic lubricants near the wall and their
internal friction

PERIODICAL:

Referativnyy zhurnal. Khimiya, no. 17, 1961, 473, abstract
17M228 (Tr. 3-y Vses. konferentsii po treniyu i iznosu v
mashinakh. M., AN SSSR, v. 3, 1960, 284-290)

TEXT: In a flow of plastic lubricants along solid surfaces, the character of their deformation is significantly modified at the expense of the effect near the wall (EW). In the case of Na and hydrocarbon lubricants, EW was studied with the help of viscosimetric data which were determined by capillary viscosimeters of constant pressure, and by an automatic AKB-2 (AKV-2) viscosimeter. EW appears very sharply in case of nonhomogenized lubricants. In some cases, if the capillary radius is changed three times, the measured viscosity value (η) is reduced to one-tenth. Homogenization either eliminates or strongly reduces EW in plastic lubricants. In the presence of EW, logarithmic flow curves $D = f(\tau)$ (D = velocity gradient;

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S/J81/61/000/017/151/166
B117/B110

Gliding of plastic lubricants near...

τ = shear stress) may pass through an angle of $< 45^\circ$. Formally, this corresponds to an increase of η with a rise of D and τ . The established anomaly of flow curves is related to the fact that the usual methods of interpreting viscosimetric data are not applicable to systems with EW. A scheme of flow development in plastic disperse systems, in which τ rises steadily, was proposed on the strength of experimental data. (1) The flow is missing, and only elastic deformations take place. (2) It is missing in the bulk. The lubricant moves like a monolith on a thin layer near the wall. The flow condition may be described in the form of rubbing speed as function of the pressure drop in the capillary. (3) In addition to the flow in the bulk, a deformation takes place in the bulk of the lubricant. The flow is described by the equation $D = D_{Vol} + \sigma \cdot R^{-1}$. Here, D and D_{Vol} = deformation rates, total and in the volume; σ = shear velocity in the layer near the wall; R = capillary radius. (4) The flow in the volume acquires a decisive significance. EW may be neglected. The lubricant flow is described by flow curves. (5) After the structure has been destroyed and the elements of the disperse phase have oriented in the flow direction, the lubricant flows like a Newton liquid with a constant viscosity. ✓
[Abstracter's note: Complete translation.]

Card 2/2

82677
S/069/60/022/004/001/003
B019/B054

15.6400

AUTHORS:

Sinitsyn, V. V., Klimov, K. I., Alayeva, Ye. V.

TITLE:

Colloidal Stability of the Disperse Systems of Lithium Soap - Oil

PERIODICAL:

Kolloidnyy zhurnal, 1960, Vol. 22, No. 4, pp. 469-476

TEXT: The present report was delivered at the Fourth All-Union Conference of Colloid Chemistry at Tbilisi in May 1958. In the system lithium stearate - oil, the authors studied the influence of the pH, of the cooling rate, of the properties of the dispersing medium, etc. on the colloidal stability of the pseudo-gel-like disperse soap - oil systems. They investigated mixtures of spindle oil of the type 3, or oil of the type MK-8 (MK-8) with lithium stearate, and determined the pH on an ЛП-6 (LP-6) potentiometer, the colloidal stability (according to GOCT(GOST) 7142-54) on a KCA(KSA) apparatus, and the viscosity on an automatic capillary viscometer of the type AKB-2 (AKV-2) and on a K-2 (K-2) plastometer. The results obtained led to the following conclusions: The pH of the system exerts a strong influence (Figs. 1, 2) manifesting itself by increasing stability

Card 1/2

SINITSYN, V.V.

Quality requirements of lubricating greases based on synthetic acids. Proizv. smaz. mat. no. 6/8:133-138 '61. (MIRA 14:8)

1. Nauchno-issledovatel'skiy institut goryuche-smazochnykh materialov.
(Lubrication and lubricants--Testing)

SINITSYN, V.V., kand.tekhn.nauk; VAKUROV, P.S., inzh.;
KRAMARENKO, G.V., kand.tekhn.nauk; POKROVSKAYA, L.S., aspirant

Stands for investigating plastic lubricants in antifriction
bearings. Izv.vys.ucheb.zav.; mashinostr. no.10:103-108
'61. (MIRA 14:12)

1. Moskovskiy avtomobil'no-dorozhnyy institut.
(Bearings (Machinery)—Lubrication)

S/032/61/027/001/011/037
B017/B054

AUTHOR: Sinitsyn, V. V.

TITLE: Methods of Judging the Properties of Plastic Lubricants
(Survey)

PERIODICAL: Zavodskaya laboratoriya, 1961, Vol. 27, No. 1, pp. 47-58

TEXT: The author gives a survey of actual methods of examining plastic lubricants. He discusses the determination of fatigue limit, viscosity, mechanical stability, evaporation, colloidal stability, chemical stability, radiation stability, resistance to water, anticorrosive properties, and protective properties by American and Soviet standards. In the Soviet Union, the fatigue limit was determined by K. I. Klimov's (Ref. 9) capillary plastometer K-2. The respective method was introduced in 1954 as standard ГОСТ 7143-54 (GOST 7143-54). The simple plastoviscositymeter ПГВ-1 (ГОСТ 9127-59) (PVR-1 (GOST 9127-59)) was recommended by Pavlov. The K-2 plastometer method may be regarded as the most suitable method of determining the fatigue limit of lubricants. The viscosity of lubricants was determined by the viscosimeter of G. V. Vinogradov and

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Methods of Judging the Properties of Plastic
Lubricants (Survey)

S/032/61/027/001/011/037
B017/B054

V. P. Pavlov. A special capillary viscosimeter was designed by A. A. Konstantinov (Ref. 25). The respective method was introduced in 1954 as standard ГОСТ 7163-54 (GOST 7163-54). Mechanical stability was determined by rotation viscosimeters. Designs by M. P. Volarovich, B. I. Leont'yev, S. M. Meshchaninov, K. S. Krym, and Ye. P. Loshakova are mentioned. K. K. Papok's modified method of determining the evaporation of engine lubricants is simple and rapid. Colloidal stability is determined in the USSR by the standard method ГОСТ 7142-54 (GOST 7142-54). Chemical stability is established by the method ГОСТ 5734-53 (GOST 5734-53). Radiation stability is determined by devices with radioactive cobalt under intense irradiation of up to $2 \cdot 10^7$ roentgens/hour (Ref. 110). Resistance to water is tested according to D. S. Velikovskiy (Ref. 13). A simple method of determining the resistance to water of lubricants has not yet been found. Anticorrosive properties of lubricants are established by two standards: ГОСТ 1037-41 and 5757-51 (GOST 1037-41 and 5757-51). Protective properties of lubricants are determined by standard ГОСТ 4699-53 (GOST 4699-53). A. S. Afanas'yev (Ref. 131) discusses in a survey 22 methods of determining corrosion products. V. S. Luneva (Ref. 132) determines the protective properties of lubricants by the degree of

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Methods of Judging the Properties of Plastic
Lubricants (Survey)

S/032/61/027/001/011/037
B017/B054

dissolution of a metal treated with the lubricant. A rapid and reliable quantitative method of determining the protective properties of plastic lubricants has not yet been found. P. A. Rebinder, Ye. Ye. Segalova, V. A. Listov, V. M. Martynov, F. K. Volynets, V. P. Varenbov, M. V. Morozova, as well as experiments by the Moskovskiy neftyanoy institut im. Gubkina (Moscow Petroleum Institute imeni Gubkin) and the TsNIL "Neftemaslozavody" (Central Scientific Research Laboratory "Neftemaslozavody") are mentioned. There are 136 references: 71 Soviet, 48 US, 1 Canadian, 2 British, and 4 German.

✓

Card 3/3

L1921

S/065/62/000/011/004/006
E075/E436

11.9400
AUTHORS:

Sinitsyn, V.V., Kartinin, B.N.

TITLE:

Electron microscope investigation of the structure of
soda greases based on the soaps of synthetic fatty
acids

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.11, 1962,
62-66

TEXT: The authors investigated for the first time the structure of greases containing sodium soaps of synthetic fatty acids as thickeners. The acids were distilled into several fractions (C₁₁ to C₂₂), the soaps of which were studied separately. It was established that the structure of the greases thickened with soaps of the acid fractions up to C₂₀ essentially do not differ from the greases thickened with sodium soaps of the corresponding natural fatty acids. The presence of admixtures (oxidation by-products) increases the dispersion of the thickener particles. Some of the particles could not be resolved by the electron-microscope used. Increasing the average molecular weight of the acid fractions leads to higher dispersion, viscosity, hardness and mechanical stability
Card 1/2

Electron microscope ...

S/065/62/000/011/004/006
E075/E436

of the greases. It was shown that in greases based on the end fractions of the acids (C₁₈ - C₂₂) and the residual acids the thickener is highly dispersed. Such greases have poor thermal stability and gel at 100 to 120°C. The same applies to soaps of acids "C₁₇ - C₂₀" produced industrially. There are 3 figures.

X

Card 2/2

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11.9400

33446

S/065/62/000/002/003/004
E075/E485

AUTHORS: Sinitzyn, V.V., Aleyeva, Ye.V., Bessmertnyy, K.I.,
Popova, Ye.P., Shmidt, A.A.

TITLE: Influence of fractional composition of synthetic fatty
acids on thermal stability and practical
characteristics of sodium greases

PERIODICAL: Khimiya i tekhnologiya topliv i masel, no.2, 1962, 53-59

TEXT: To explain differences in performance (gelation at 80 to 120°C) between greases thickened with sodium soaps of natural fatty acids (C16 - C18) which are satisfactory and synthetic acids (fractions C10 - C16 and C12 - C20) which are not satisfactory, the latter were analysed by gas-chromatography. The synthetic acids were vacuum distilled into 5 fractions, the fractions having the following composition: top fraction: C11 - C15, 3.1%;
1) C13 - C17, 3%; 2) C15 - C19, 14%; 3) C16 - C20, 9.8%;
4) C17 - C21, 16.8%; 5) C18 - C22, 9.3%; residue, 40%.
Greases were prepared from each of the fractions and their mixtures saponified with NaOH in oil MK-8. It was found that the fractions 1 to 4 gave greases which had similar satisfactory thermal properties to the greases prepared from natural stearic acid. However,
Card 1/3

33446
S/065/62/000/002/003/004
E075/E485

Influence of fractional ...

fraction 5 gave greases that gelled at a lower temperature. This behaviour was similar to that exhibited by the greases prepared from the original synthetic acids. Also admixture of fraction 5, or the residue fraction, to the other fractions caused gelation to occur at a lower temperature than that characterizing the greases prepared from fractions 1 to 4. The authors conclude that some components present in fraction 5 and the residue cause the gelation to occur. Comparing the properties of the greases, it was evident that the heavier fractions have higher thickening action than the light fractions. With the increase in the mean molecular weight of the acids the consistency of the greases increases and oil separation decreases; the latter property is equivalent to an improved colloidal dispersion of the soap. Other improvements include viscosity-temperature characteristics and mechanical stability. It is concluded that the gelation of the greases is not connected with the presence in the fractions of the high molecular weight acids but with the unsaponifiable components of the residual fraction, some of which may be oxidation by-products. When the residual fraction is removed, the remaining

Card 2/3

✓

33446

S/065/62/000/002/003/004
E075/E485

Influence of fractional ...

acids give generally better sodium greases than those prepared from carboxylic acids derived from animal and vegetable fats. The analysis of fractional composition of the synthetic fatty acids by gas-chromatography was carried out at NII SZhIMS by B.P.Kotel'nikov. There are 2 figures, 4 tables and 3 Soviet-bloc references.

✓

Card 3/3

33540

S/069/62/024/001/002/003
B119/B101

1583

11.9400

AUTHORS:

Sinitzyn, V. V., Alejeva, Ye. V., Kartinin, B. N. (Moscow)

TITLE:

Effect of free alkalis and acids on structure and properties of plastic greases thickened with Na soaps

PERIODICAL: Kolloidnyy zhurnal, v. 24, no. 1, 1962, 75 - 79

TEXT: Investigations were conducted on four lubricating greases whose alkalinity (up to 0.16% NaOH) or acidity was varied (with stearic acid up to an acid number of 1.2 mg KOH/g of grease). Production of the lubricating greases: Soap produced from stearic acid according to ГОСТ 2074-51 (GOST 2074-51) and NaOH was suspended at 10% in low-viscosity MK-8 (MK-8) oil according to ГОСТ 6457-53 (GOST 6457-53), heated to 200°C, and cooled down rapidly (grease 1) or slowly during 4 hrs (grease 2). Greases 3 and 4 were produced in the same manner with spindle oil - 3 according to ГОСТ 1707-51 (GOST 1707-51). Alkali, or stearic acid, was admixed to the soap. Investigations: Electron microscopic studies on an ЭМ-3 (EM-3) apparatus; shearing strength determination on a К-2 (K-2) plastometer according to ГОСТ 7143-54

Card 1/3

33540
S/069/62/024/001/002/003
B119/B101

Effect of free alkalis and acids ...

(GOST 7143-54); colloidal stability determination on a K(A(KSA) apparatus according to GOST 7412-54 (GOST 7412-54) based on the quantity of oil squeezed out of the grease; acidity or alkalinity determination by titration of the alcohol-water extract from the petroleum ether-grease solution according to GOST 6707-57 (GOST 6707-57). Results: The size of Na stearate particles dispersed in oils strongly decreases with decreasing acidity and increasing alkalinity of the system; the dispersion degree increases and, with it, the shearing strength (1 g/cm^2 , with acid number 1.2 mg KOH ; 3 g/cm^2 , neutral; 12 g/cm^2 , with $0.16\% \text{ NaOH}$), as well as the colloidal stability (28.1% of oil is squeezed out of grease 2 with acid number 1.2 mg KOH ; 13.3% of oil, out of the same grease with $0.03\% \text{ NaOH}$; 12.4% , from grease 1 with $0.07\% \text{ NaOH}$; 26.0% , with neutral reaction). Differences in the viscosity of the initial oil, and in the cooling rates during the production, show much lower effects. Certain rules hold for all lubricating greases thickened with soaps (Li soaps). These results show that the tolerance of the NaOH content in Na greases (e.g., Konstalin, HK -50 (NK-50)), fixed at $0 - 0.2\%$ by the standard specifications, is too large. There are 3 figures, 1 table and 6 references.

Card 2/3

h1701

S/032/62/028/011/008/015

B104/B102

11.9400

AUTHORS: Sinitsyn, V. V., Kalashnikov, V. P., Baybakova, L. L.,
Smolokotina, Z. G. and Chukhrova, A. V.

TITLE: Method of estimating the oxidizability of lubricating greases

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 11, 1962, 1352 - 1354

TEXT: Following thorough consideration of the optimum quantity of grease whose oxidizability is to be determined, its optimum temperature, and optimum oxidation time, the following procedure is suggested using results published in Soviet and non-Soviet papers (F. T. Wright, H. A. Mills, Proc. ASTM, 38, II (1938)): 1.7 - 1.9 g of grease is put into a small cup of electrolytic copper, or a slice of grease (1 ± 0.05 mm thick, 50 mm diameter) is applied to a glass plate by means of a template. The small cup or the glass plate are then enclosed in a Petri cup and are kept in a thermostat at a certain temperature for 5 - 200 hrs. Before and after the test, the acid number of the grease is determined according to GOST 6707-57 (GOST 6707-57). The index of oxidation of the acid is defined as being the difference between the acid numbers before and after the test. Temper-

Card 1/2

S/032/62/028/011/008/015
B104/B102

Method of estimating the...

ature and time of the experiment are fixed according to the mode of application of the grease. The high stability of ЦИАТИМ-201 (TsIATIM-201), ЦИАТИМ-202 (TsIATIM-202), and 1-ЛЗ (1-L3) is due to the content of diphenyls, that of ЦИАТИМ-203 (TsIATIM-203) and ЯНЗ-2 (YaNZ-2) to the content of sulfurous compounds, and that of ЦИАТИМ-203 (TsIATIM-203) is due also to the additional content of triphenyl phosphate. ЦИАТИМ-221 (TsIATIM-221) practically does not oxidize, because of the high stability of polysiloxanes. There are 2 figures and 1 table. X

ASSOCIATION: Moskovskiy zavod "Neftegaz" (Moscow "Neftegaz" Plant)

Card 2/2

SINITSYN, Vladimir Vladimirovich; DZHORDZHI, A.N., ved. red.;
STAROSTINA, L.D., tekhn. red.

[Foreign lubricating greases] Zarybeznye (konsistent-
nye) smazki. Moskva, Gostoptekhzdat, 1963. 135 p.
(MIRA 17:2)

SINITSYN, V.V.; MAN'KOVSKAYA, N.K.; ALEYEVA, Ye.V.; KARTININ, B.N.

Effect of the structure of synthetic carboxylic acids on the
structure and properties of plastic sodium greases. Neftekhimiia
3 no.1:128-134 Ja-F '63. (MIRA 16:2)

1. Moskovskiy institut neftekhimicheskoy i gazovoy
promyshlennosti imeni I.M. Gubkina.
(Lubrication and lubricants)
(Acids, Organic)

SINICYN, V.V. [Sinitsyn, V.V.] (Moskva)

Most important properties of plastic lubricant greases. Ropa a
uhlie 5 no.10:293-295 0 '63.

SINITSYN, V.V. (Moskva); KARTININ, B.N. (Moskva)

Electron microscope study of structural changes in plastic greases
during oxidation. Koll.zhur. 25 no.6:671-673 N-D '63. (MIRA 17:1)

ACCESSION NR: AP4023499

S/0069/64/026/002/0200/0206

AUTHORS: Klimov, K.I.; Leont'yev, B.I.; Sinit'syn, V.V.

TITLE: The effect of the intensity of strain on the bulk-mechanical properties of lubricating greases

SOURCE: Kolloidnyy zhurnal, v. 26, no. 2, 1964, 200-206

TOPIC TAGS: lubricating grease, lubricating grease property, sodium grease, calcium grease, lithium grease, grease breakdown, thixotropic breakdown, rotatory viscosimeter, capillary viscosimeter, strength temperature characteristic

ABSTRACT: The thixotropic breakdown and recovery of lubricating greases was investigated by breaking them down in the annular gap of a rotatory instrument. The breakdown time was controlled by changing the axial rate of flow of the grease between the stationary and the rotating cylinders of the instrument. Viscometric measurements in capillary (AKV-2) and rotatory (PVR-1) instruments were compared

Card 1/4

ACCESSION NR: AP4023499

(Figs. 1 and 2 of the Enclosure); in the rotatory viscosimeter the breakdown of the greases must be considered when comparing results. Viscosity, yield value, and tensile strength of the greases was determined before and after breakdown of sodium and calcium greases, and lubricant TsiATIM-201 (lithium). Increase in the breakdown intensity lowers the viscosity and yield value of the greases down to a given level. Some greases made of soaps of synthetic acids showed an increase in the yield values with increasing strain. Intensity of mechanical breakdown is only slightly indicative of the strength-temperature and the viscosity-rate properties of the lubricating greases. Orig. art. has: 6 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 10Nov62

DATE ACQ: 15Apr64

ENCL: 02

SUB CODE: FP

NO REF SOV: 006

OTHER: 000

ATD PRESS: 3044

Card 2/4

ACCESSION NR: AP4023499

ENCLOSURE: 01

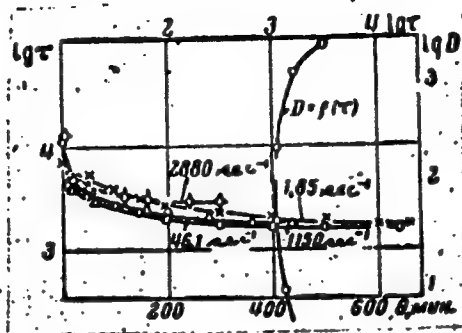


Fig. 1

Viscosity characteristics of TsiATIM-201 grease at 20C, obtained on rotary viscosimeter

Card

3/4

ACCESSION NR: AP4023499

ENCLOSURE: 02

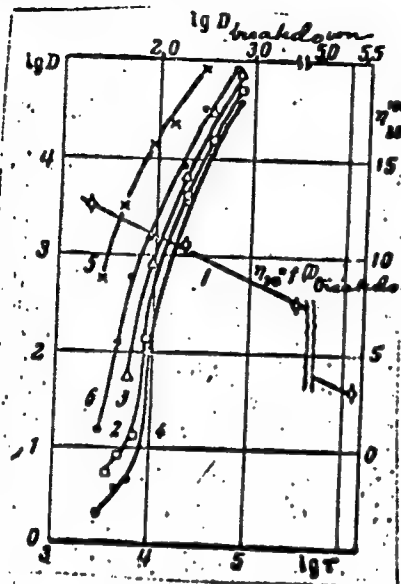


Fig. 2
Relationship of viscosity characteristics of TsiATIM-201 grease, obtained on capillary viscosimeter AKV-2 at 20C, to the intensity of its breakdown: 4--prior to breakdown; 2, 3, 6--after breakdown at D , equaling 21 sec^{-1} , 210 sec^{-1} and 3150 sec^{-1} ; 5--homogenizing at $D = 252,000 \text{ sec}^{-1}$; 1-- η_0

Card

4/4

SINITSYN, V.V. (Moskva)

- Thermal strengthening and gelatinization of pseudogels. Koll.zhur.
26 no.2:245-251 Mr-Apr '64. (MIRA 17:4)

L 16011-65 EWT(m)/EPF(c)/T Pr-4 DJ
ACCESSION NR: AP4045005

S/0065/64/000/009/0049/0052

AUTHOR: Ishchuk, Yu. L.; Sinitsyn, V. V.

TITLE: The influence of the structure of fatty acids upon the properties of calcium-containing lubricants, the solidols

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 9, 1964, 49-52

TOPIC TAGS: solidol, lubricant, saturated fatty acid, unsaturated fatty acid, natural fatty acid, synthetic fatty acid, lubricant chemical stability, lubricant thermal stability, lubricant mechanical property, ratio of unsaturation

ABSTRACT: Most solidols in the USSR are prepared from synthetic fatty acids, mainly of the stearic type, obtained by the oxidation of paraffin. Calcium soaps of saturated acids, however, are not usable for solidols. The present work is aimed at determining the best use of synthetic fatty acids as components of the lubricant by studying the influence of the ratio of saturated and unsaturated acids upon solidol properties. Various ratios of stearic, oleic acid, cottonseed oil

Card 1/3

L 16011-65

ACCESSION NR: AP4045005

and tallow or their mixtures were used. These were heated with dry calcium soaps and the specimens tested after 2-3 days for contents of water, free alkali, drop point temperature, break- and shear resistance, viscosity, etc. The thickening capability of hydrated calcium soaps was found to increase with an increase in the unsaturation of the solidols or their glycerides. Viscosity and strength also increased and colloidal stability improved. However, increase of the relative share of unsaturated acids caused a decrease in mechanical and chemical stability of the solidols. Solidols from unsaturated acids showed a slow, prolonged (5 or more days) thixotropic increase of solidity limits. In several cases a lowering of the limit of shear strength was observed in solidols at high temperatures (70C). To obtain high quality solidols, soaps of a mixture of fatty acids should be used. Unsaturated acids will increase the thickening ability of the soap, while the saturated acids will compensate for the insufficient mechanical, chemical and thermal stability of soaps from unsaturated acids. Orig. art. has: 2 tables and 4 figures.

ASSOCIATION: None

Card 2/3

L 16011-65

ACCESSION NR: AP4045005

SUBMITTED: 00

ENCL: 00

SUB CODE: FP, GC

NO REF SOV: 004

OTHER: 000

Card 3/3

L 34081-65 EFF(c)/EWT(m)/T Pr-4 DJ

ACCESSION NR: AP5007173

S/0286/65/000/003/0042/0042

AUTHOR: Ishchuk, Yu. L.; Sinitsyn, V. V.; Goshko, N. S.; Stepanyants, S. A.;
Kabarivskaya, M. B.; Prokopenko, V. A. 22
B

TITLE: Preparative method for calcium multi-constituent lubricating greases. Class
23, No. 167936

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 3, 1965, 42

TOPIC TAGS: grease, lubricating grease, lubricant, calcium grease

ABSTRACT: An Author Certificate has been issued for a preparative method for calcium multi-constituent lubricating greases. The method consists in blending mineral oil with high- and low-molecular-weight carboxylic acids and saponifying with calcium hydroxide. In order to improve the thermal stability and mechanical strength of the grease and its ability to withstand service in a wide range of temperatures, glycerides of fatty acids containing two or three double bonds are added to the grease prior to saponification. [SM]

ASSOCIATION: none

Card 1/2

L 42141-65 EMT(m)/EPF(e)/T Fr-4 DJ S/0069/65/027/002/0264/0268
 ACCESSION NR: AP5008904

AUTHORS: Sinitayn, V. V.; Ishchuk, Yu. L.; Kartinin, B. N.

TITLE: Effect of the degree of saturation of the fatty acid radical on the structure of hydrated Ca-soap in greases //✓

SOURCE: Kolloidnyy zhurnal, v. 27, no. 2, 1965, 264-268

TOPIC TAGS: saturated hydrocarbon, soap, grease

ABSTRACT: The effect of degree of saturation of the fatty acid radical on the structure of hydrated Ca-soap in greases was investigated. In order to study the effect of unsaturation of the fatty acid radical on the size and form of the soap fibers, two series of greases were prepared: the first from pure stearin and olein acids and their mixtures, and the second based on hydrogenated fat, cottonseed oil, and mixtures of the two. It was found that the degree of saturation of the fatty acid radical has a marked influence on the structure of Ca-soaps in greases. Intertwined fibers in the structure of hydrated Ca-greases can be obtained only for a given ratio of saturated to unsaturated acids in the saponified fat. When the relative proportion of fatty acids increases to more than 40% or decreases to less than 25%, the shape and size of the Ca-soap fibers in the greases change markedly. The structure of the greases thickened with Ca-soaps is practically unaffected by

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16
B

L 42141-65

ACCESSION NR: AP5008904

change in degree of saturation of the fatty acids or by the method of preparing the soaps, if the ratio between saturated and unsaturated acids in the saponified fat is kept constant. With increasing dispersion of the Ca-soap fibers, the ability to thicken increases. Colloidal stability is improved by reduction in size of the Ca-soaps. This also increases the viscosity and yield of the Ca-greases. These relations are in agreement with previously discovered data on Na- and Li-greases. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 22Nov63

ENCL: OC

SUB CODE: OC, FF

NO REF SOV: 008

OTHER: 002

cc
Card 2/2

L 40802-65 EWT(m)/EPF(c)/T Pr-4 DJ
 ACCESSION NR: A5008905

3/0069/65/027/002/0289/0289

AUTHORS: Daynega, Yu. F. (Moscow); Sinitsyn, V. V. (Moscow); Vinogradov, G. V. (Moscow)

31
B

TITLE: Optical anisotropy of calcium lubricants 112

SOURCE: Kolloidnyy zhurnal, v. 27, no. 2, 1965, 289

TOPIC TAGS: anisotropy, calcium compound, lubricant, soap, polarization, crystal lattice, electron microscopy, optic diffraction / US 2 lubricant.

ABSTRACT: Optical polarization method and electron microscopy were used in studying the structural changes in hydrated calcium lubricant US-2 under the influence of heating. The angle between the flow vector of the lubricant and the polarization plane was 45° . Upon heating the lubricant to 45-50C, its light green color was replaced by dark red, proving the absence of diffraction. The green returned at cooling the substance to room temperature. However, after heating to 70° the change became irreversible. Electron microscope study showed that up to 50C the structure of the dispersion phase did not change, whereas at 70C it changed sharply. As has been stated by R. Grin-Kelli and B. V. Deryagin (Dokl. AN SSSR, 153, 638, 1963), the reversible change in the optical properties

Card 1/2

L 40302-65

ACCESSION NR: AP5008905

on heating to 50C is caused by the reversible changes in the anisotropic structure of water films in the crystalline hydrates of the substance. Vast changes in the crystal lattice at 70C cause the irreversible changes of the structure and the optical properties of the lubricant. Reference is made to 2 figures not shown in the original article.

ASSOCIATION: none

SUBMITTED: 14Oct64

ENCL: 00

SUB CODE:FP,OP

NO REF SOV: 003

OTHER: 001

Card

ps
2/2

KONSTANTINOV, A.A.; SINITSYN, V.V.; VINOGRADOV, G.V.

Automatic capillary viscosimeter AKV-4. Zav. lab. 31 no.2:239-241
'65. (MIRA 18:7)

L 43736-65 EWT(1)
ACCESSION NR: AP5006534

S/0056/65/048/002/0761/0765

AUTHOR: Gorelik, L. L.; Redkoborodyy, Yu. N.; Sinitsyn, V. V.

TITLE: The effect of a magnetic field on thermal conductivity of gases with non-spherical molecules

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 2, 1965, 761-765

TOPIC TAGS: nonspherical molecules, thermal conductivity, gas thermal conductivity, nitrogen, carbon monoxide, carbon dioxide, hydrogen, deuterium

ABSTRACT: Results of investigations of the effect of nonspherical molecules in N_2 , CO, CO_2 , H_2 and D_2 are briefly reported. The mean rotary magnetic moments μ , determined on the basis of these experiments, and data on the nonsphericity of these molecules are given in table 1 and figs. 1-4 of the Enclosure. "The authors express gratitude to I. K. Kikoin, Yu. M. Kagan, L. A. Maksimov, V. Andriyako and A. A. Sazykin for valuable discussion, V. Kh. Volkov for interest and assistance in the work, V. I. Nikolayev for assistance in preparation of the instruments and S. A. Repin for furnishing the carbon monoxide gas." Orig. art. has: 4 figures, 1 table, 2 formulas.

Card 1/6

L 43736-65

ACCESSION NR: AP5006534

ASSOCIATION: none

SUBMITTED: 17Nov64

ENCL: 04

SUB CODE: NF, TD

NO REF SOV: 003

OTHER: 006

Card 2/6

L 53616-65 EWT(m)/EPF(c)/T Pr-4 DJ/RH

ACCESSION NR: AP5011691

UR/0065/65/000/005/0045/0049
665.59

AUTHORS: Sinitayn, V. V.; Ishchuk, Yu. L.; Nakonechna, M. B.; Kolosyuk, R. G.;
Ishchuk, L. P.; Prokopchuk, V. A.; Umanskaya, O. I. 33 B

TITLE: Solid lubricants thickened with soaps of the mixtures of unsaturated acids and with synthetic (saturated) fatty acids 1

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 5, 1965, 45-49

TOPIC TAGS: lubricant, solid lubricant, lubricant viscosity, soap, saturated hydrocarbon, acid, unsaturated compound, synthetic hydrocarbon / USs 2 grease, USs automobile grease, 3V spindle oil, SV engine oil, DOZhV(TUMKhP 250 51) oleic acid

ABSTRACT: The effect of the degree of saturation of the fatty acid radical in calcium soap on the structure and properties of hydrated calcium lubricants was studied in an effort to improve the quality of synthetic lubricants. Because synthetic fatty acids (SFA) contain primarily the saturated carboxylic acids, it was assumed that the addition of unsaturated acids would change drastically the properties of their calcium soaps, resulting in end-products identical in quality

Card 1/4

L 53616--65

ACCESSION NR: AP5011691

to the natural ones. The solid lubricants described here were made from a mixture of 3V spindle oil and SV engine oil with viscosity of 39.2 centistoke at 50C. DOZhV(TUMKhP 250 51) oleic acid, the SFA fractions No. 3 and (C₁₀-C₁₆), and their mixtures served as the saponification stock. The SFA composition was determined chromatographically. The samples of lubricants were prepared in an autoclave. The process and the quality evaluation method used in these experiments were described previously by Yu. L. Ishchuk and V. V. Sinitsyn (Khim. i tekhnol. topliv i masel, No. 9, 1964). Characteristic properties of the lubricants and of the materials used are tabulated. The effects of stock composition on the viscosity, shearing strength, and the colloidal stability of the products are shown in Fig. 1 on the Enclosure. It was noted that the thickening capacity of the solid lubricants increased with the increased degree of unsaturation of the SFA-oleic acid mixtures, and also that the mixtures with a greater degree of unsaturation were required in smaller amounts for the production of lubricants with the given qualities. Properties of the lubricant prepared with soaps containing 75-100% unsaturated acids were inferior. At 70C they developed a coat of hard gelatinous film and changed their color. Optimal mixtures for the production of synthetic lubricants with proper thermal and oxidation stability, and with other properties similar to those of natural oils contained:

Card 2/4

L 53616-65

ACCESSION NR: AP5011691

unsaturated acids: 60-75%; SFA: 25-40%. Orig. art. has: 2 tables and 3 figures.

ASSOCIATION: none

SUBMITTED: 00

NO REF SOV: 006

ENCL: 01

SUB CODE: FP

OTHER: 000

Card 3/4

L 53616-65

ACCESSION NR: AP5011691

ENCLOSURE: 01

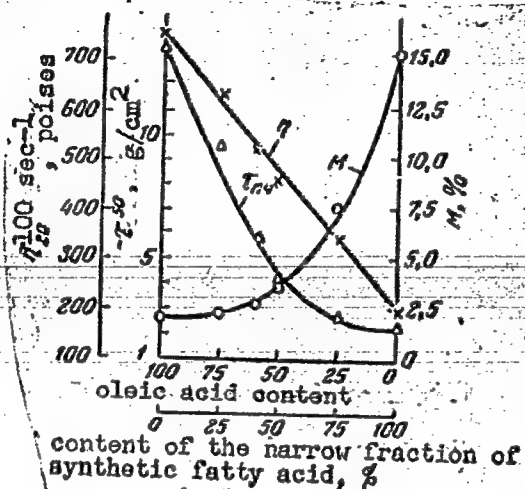


Fig. 1.

The effect of the composition of saponified stock (the mixture of synthetic fatty acids No. 3 and oleic acid) on the properties of solid lubricants

Card 4/4

120478-66 EMT (T) / T / EMT (J) WW/DJ/RM
ACC NR: AP5027750

SOURCE CODE: UR/0065/65/000/009/0050/0053

AUTHOR: Sinitsyn, V.V.; Vasil'yeva, L.S.

ORG: none

TITLE: Viscous properties of lubricants and power loss in roller bearings

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 9, 1965, 50-53

TOPIC TAGS: lubricant, lubricating oil, lubricant viscosity, grease, organic lubricant, roller bearing, siloxane

ABSTRACT: The effect of lubricating oil and plastic grease viscosities on the rolling resistance R_r and stabilized rolling resistance R_{rs} of open roller bearings was investigated. The experiments were carried out with lubricating oil from petroleum, polysiloxane oils, tetrafluoromethane/fluids, and greases thickened with 10% lithium stearate or 10% sodium stearate. The experimental results for the lubricating oils show that: 1) at 15-84 C and the same viscosity the experimental points on the rolling resistance vs. viscosity curve practically coincide regardless of the nature and chemical composition of the lubricating oil, 2) the R_{rs} and the oil viscosity log are in a direct ratio even though the latter sustains a change of the order of three decimal places, and 3) the fluoromethane fluids behave differently from the lubricating oils and at the same viscosity the R_{rs} for the former is 1.7-1.8 times higher than for the

Card 1/2

UDC: 665.521.5

L 20173-66

ACC NR: AP5027730

lubricating oils. The experimental results for the plastic greases show that: 1) the R_r decreases at first rapidly and then gradually for all the samples, 2) for grease with low-viscosity and high-viscosity dispersion media the R_{rs} develops within 3-4 and 20-40 hrs, respectively, 3) for grease with viscous dispersion media the R_r increases intermittently by tens and hundreds gram-weight/cm and then decreases more or less uniformly, 4) the intermittent changes in the R_r might be due to grease particles dropping in the operating region of the bearing, 5) the actual viscosity, tensile strength, composition, and structure of plastic grease have a small effect on the R_r of the bearing, and 6) an increase in the viscosity of lubricating oils by using lubricating oils of higher viscosity in the preparation of plastic grease affects the R_{rs} of a bearing to a greater degree than a similar increase in viscosity due to lowering of the test temperature. These data on the importance of the viscosity properties of lubricating oils and of dispersion media in plastic greases in the total balance of power loss, occurring at temperatures from plus 10 to minus 10 C and viscosities of dispersion media exceeding 100-200 centistokes, are applicable only to the operation of open roller bearings of automobiles and must be verified experimentally for other types of bearings. Orig. art. has: 5 figures and 2 tables.

SUB CODE: 11/13 SUBM DATE: none ORIG REF: 004

Card 2/2

Lpc

SINITSYN, V.V.; ISHCHUK, Yu.L.; PROKOPCHUK, V.A.

Structure of pseudogels produced by the thickening of hydro-carbon oils with Ca and Li soaps of saturated carboxylic acids.

Dokl. AN SSSR 163 no.2:426-429 J1 '65.

(MIRA 18:7)

1. Submitted December 22, 1964.

SINITSYN, V V , ISKHOD. 1.1.1.

Relation between the length of the fatty acid chain and the rheological characteristics of the pseudogels of Ca soaps.

Dokl. AN SSSR 162 no.3:625-628 My '65. (MIRA 18:5)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut neftyanoy i neftekhimicheskoy promyshlennosti. Submitted December 10, 1964.

L 20366-66 EWT(m)/T DJ

ACC NR: AP6006447 (A)

SOURCE CODE: UR/0065/66/000/0027/0030

AUTHORS: Ishchuk, Yu. L.; Sinit'syn, V. V.; Goshko, N. S.; Nakonechnaya, M. B.; Prokopchuk, V. A.; Vakurov, P. S. ³³ (B)

ORG: none

TITLE: Complex calcium greases derived from synthetic fatty acids

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 2, 1966, 27-30

grease, viscosity, organic synthetic process,
TOPIC TAGS: lubricant, lubricant property, organocalcium compound / GOST 1707-51
No. 50 lubricant

ABSTRACT: The properties and performance of a number of calcium greases derived by adding 98% acetic acid and various synthetic fatty acids (containing from 7 to 25 carbon atoms in the molecule) to GOST 1707-51 industrial oil No. 50 were studied. The acid number, saponification number, iodine number, average molecular weight, melting point, and composition of the fatty acid fractions used are tabulated. Electronmicrophotographs of the synthesized greases are presented. The viscosity characteristics of the calcium greases were determined (see Fig. 1). It is concluded that the complex calcium greases derived from C₁₀ - C₂₀ and C₁₇ - C₂₀ fatty acids possess a sufficiently high mechanical stability, low viscosity at 0C,

Card 1/2

UDC: 621.892.8

L 20366-66

ACC NR: AP6006447

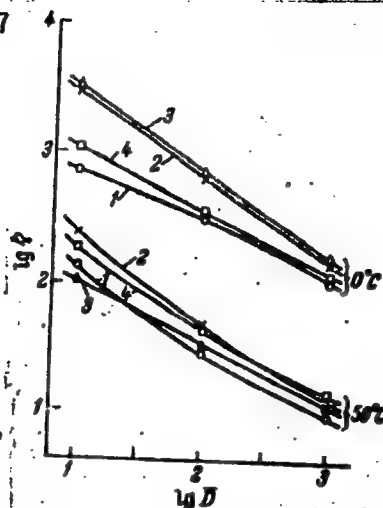


Fig. 1. Viscosity characteristics of synthetic complex calcium greases derived from synthetic fatty acid fraction. 1 - $C_{10} - C_{16}$; 2 - $C_{17} - C_{20}$; 3 - larger than C_{21} ; 4 - $C_{10} - C_{20}$. η - viscosity in poise; D in revolutions per sec. [Abstracter's note: the meaning of D is not made clear. Its units are $\text{sec}^{-1/7}$]

and high water stability to be useful in various applications up to a temperature of 120--175C and over short periods of time at a temperature of 200C. Orig. art. has: 2 tables and 3 graphs.

SUB CODE: 11/
Card 2/2 vmb

SUBM DATE: none/

ORIG REF: 009/

OTH REF: 001

L 45937-66 EMT(m)/T DJ/GD (A) SOURCE CODE: UR/0000/65/000/000/0067/0076
ACC NR: AT6020588

AUTHOR: Ishchuk, Yu. L.; Sinitsyn, V. V.; Prokopchuk, V. A.; Nakonechnaya, M. B.;
Kan'kovskaya, N. K.; Ishchuk, L. P.; Pobortsev, E. P. 29
B1

ORG: UkrNIIGiproneft

TITLE: Effect of water concentration and composition of fatty acids on the structure
and properties of synthetic greases

SOURCE: Neftepererabotka i neftekhimiya (Petroleum refining and petroleum chemistry).
Kiev, Naukova dumka, 1965, 67-76

TOPIC TAGS: fatty acid, grease

ABSTRACT: A series of greases were prepared from the residue of the synthesis of synthetic fatty acids (acid number 103 mg KOH/g), C₅-C₉ acids (280 mg KOH/g), and acid water (248 mg KOH/g); the dispersion medium was a mixture of Z spindle oil and S machine oil. This composition corresponds to that of commercial synthetic grease. It was found that a change in the water content of the greases in the range of 1 to 5% does not affect their volume mechanical properties or structure, indicating that it is desirable to raise the water content of such greases to 4-5%. The structure of hydrated calcium lubricants prepared from soaps of narrow fractions of heat-treated and distilled synthetic fatty acids and their mixtures differs from the structure of fatty and synthetic greases in that it consists of rod-shaped, petal-shaped, and flaky soap

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L 22545-66 EWT(1)
ACC NR: AP6008743

SOURCE CODE: UR/0386/66/003/003/0145/0149

AUTHOR: Gorelik, L. L.; Sinitzyn, V. V.

ORG: none

TITLE: Effect of electric field on transport phenomena in polar gases with non-spherical molecules

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 3, 1966, 145-149

TOPIC TAGS: gas property, electric field, transport phenomenon, transport property, viscosity, thermal conduction

ABSTRACT: To check whether the viscosity and thermal conductivity of gases with nonspherical molecules change in an electric field as they do in a magnetic field, the authors have undertaken investigations of the influence of an electric field on the thermal conductivity of gases of this type. It was assumed that in an electric field the effect would qualitatively have the same character as in a magnetic field, provided there were a sufficiently high probability that the molecules rotate in the electric field in such a way that the rotation axis does not make a right angle to the dipole moment. In view of this, special attention was paid to nitrogen trifluoride (NF_3), whose molecules form a trihedral pyramid. Experiments

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L 22545-66

ACC NR: AP6008743

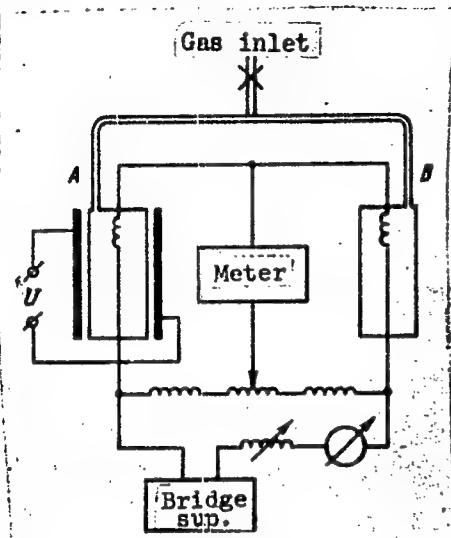


Fig. 1. Diagram of experimental setup

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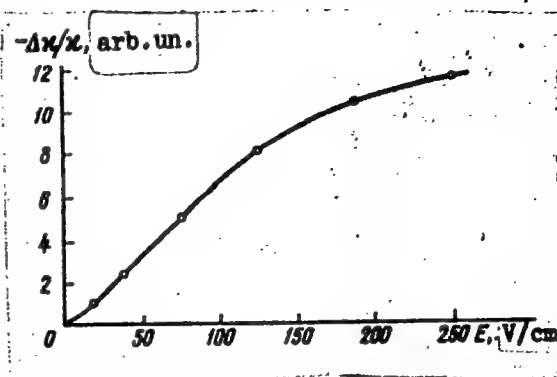


Fig. 2. Plot of ϵ vs. E for NF_3

L 22545-66

ACC NR: AP6008743

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were made with C_2H_5Cl , C_2H_5OH , CO , NO_2 , and SO_2 . Preliminary results of these investigations are presented. Figure 1 shows the schematic diagram of the setup. The measurements were made with a pickup comprising two interconnected glass chambers (Fig. 1) through which electrically heated platinum wires were drawn. The wires were two arms of a Wheatstone bridge and a microvoltmeter sensitive to a pressure change of 10^{-6} was connected in the diagonal of the bridge. The relative change in the thermal conductivity ($\epsilon = -\Delta\kappa/\kappa$) could be judged from the bridge unbalance occurring when an electric field was turned on in one of the chambers. The measurements were made at pressures ~ 0.06 -- 1 mm Hg and in electric fields up to ~ 1 kv/cm. The results obtained for NF_3 at ~ 0.1 mm Hg by using a homogeneous alternating field (Fig. 2) show that ϵ has a tendency to saturate. At maximum E (~ 0.3 kv/cm) ϵ turned out to be of the order of 0.5%, i.e., of the same order as for nonpolar gases, such as O_2 and N_2 , placed in a magnetic field. According to preliminary data, ϵ is a function of the ratio E/P . The investigations of CO , NO_2 , and SO_2 have shown that for these gases, at $p \sim 0.5$ mm Hg and $E \sim 0.2$ kv/cm, the value of ϵ is zero. The results are compared with those obtained by others and the reasons for discrepancies are briefly discussed. More careful investigations of the effect in these and other gases are planned. The authors thank I. K. Kikoin and V. Kh. Volkov for interest in the work, Yu. M. Kagan, L. A. Maksimov, and Yu.

Card 3/4

L 22545-66

ACC NR: AF6008743

4
V. Mikhaylova for useful discussion, V. I. Nikolayev for help in preparing the instruments and carrying out the investigations, and V. N. Cherednikov, N. N. Nikolaeva, and V. P. Bochin for furnishing the gases. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 25Dec65/ ORIG REF: 003/ OTH REF: 009

Card 4/4

ACC NR: 36885-56 ENT(m)/T/ENT(t)/ETI LJP(c) DJ
AP6018061 (N) SOURCE CODE: UR/0020/66/168/003/0638/0639

AUTHOR: Sinitsyn, V. V.; Aleyeva, Ye. V.

ORG: none

TITLE: Effect of fatty acid chain length on rheological characteristics of pseudo-gels in lithium soaps

SOURCE: AN SSSR. Doklady, v. 168, no. 3, 1966, 636-639

TOPIC TAGS: lithium, rheologic property, solid viscosity, grease, lubricant, fatty acid

ABSTRACT: The effect of fatty acid chain length (C_{12} - C_{22}) on tensile and shearing strengths, effective viscosity, and shrinkage of greases based on lithium soaps was investigated. The study encompassed lithium soaps based on the following acids: lauric (C_{12}), myristic (C_{14}), palmitic (C_{16}), stearic (C_{18}), and behenic (C_{22}). As measured at 20° and 80°C, the lithium grease based on palmitic acid exhibited highest tensile and shearing strengths. Moreover, maximum effective viscosity and minimum shrinkage were found to coincide with the greases based on fatty acids

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UDC: 541.18.02

L 36865-66

ACC NR: AP6018061

within C₁₆-C₁₇ chain length range. It was found that the rheological characteristics of lithium greases based on C₁₂-C₂₂ remained practically unaffected after aging for 30 days at 120°C. Data on the rheological properties of various lithium greases used in this study are graphed and tabulated. The results obtained in this study are in disagreement with published data indicating monotonic decline of the rheologic properties of greases with increases in fatty acid chain length. The article was presented by Academician P. A. Rebinder on 25 September 1965. Orig. art. has: 2 figures and 4 tables.

SUB CODE: 07/ SUBM DATE: 25Sep65/ ORIG REF: 006/ OTH REF: 003

Card 2/2/44

L 07160-67 EWT(m) JAJ/DJ

ACC NR: AP6027599

(A)

SOURCE CODE: UR/0318/66/000/007/0022/0025

AUTHOR: Sinityn, V. V.; Ishchuk, Yu. L.; Prokopchuk, V. A.; Goshko, N. S.; Nakonechna, N. B.

38
36
13

ORG: none

TITLE: Effect of adding glycerides of higher unsaturated acids on the properties of multipurpose lubricants //

SOURCE: Neftepererabotka i neftekhimiya, no. 7, 1966, 22-25

TOPIC TAGS: high temperature lubricant, organic lubricant, solid lubricant, lubricant component, soap

ABSTRACT: In view of the extensive potential applications of multipurpose calcium-containing lubricants, studies were carried out in an attempt to eliminate some of their disadvantages, such as thickening during storage, hygroscopicity, and change in properties upon absorption of atmospheric moisture. It was found that the introduction of 1-3% glycerides of higher unsaturated carboxylic acids (e. g., eleostearic acid) into the composition of the lubricants (prepared by thickening mineral oils with calcium soaps of stearic and acetic acids) improved the viscosity-temperature and viscosity-speed characteristics. The products thus obtained considerably surpass ordinary solid lubricants in properties and can be used as universal multipurpose lubricants. Tests in roller bearings at 120° confirmed that the new lubricants had much

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UDC: 565.633-4:621.43.019.862.003.1

L 07160-67

ACC NR: AP6027599

2.11

better performance characteristics than the high-temperature lubricants 1-13, MX-50, etc. The tests were performed by P. S. Vakurov, to whom the authors are deeply grateful. Orig. art. has: 1 figure and 1 table.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 004

Card 2/2 mte

ACC NR: AP7001341

SOURCE CODE: UR/0386/66/004/011/0456/0461

AUTHOR: Gorelik, L. L.; Nikolayevskiy, V. G.; Sinitayn, V. V.

ORG: none

TITLE: Transverse heat transfer in a molecular-thermal stream produced in a gas of nonspherical molecules in the presence of a magnetic field

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 11, 1966, 456-461

TOPIC TAGS: heat transfer, heat capacity, gas flow, molecular flow, oxygen, nitrogen, argon, electron spin

ABSTRACT: The authors report the results of experiments made to observe the theoretically predicted heat flow perpendicular to a magnetic field in which a temperature gradient is produced in a direction perpendicular to the magnetic field. This flow should be perpendicular to both the field and the temperature gradient, and should reverse sign when the magnetic field direction is reversed ("odd" effect). The effect results from the tensor character of the heat conduction of the gas in the field. The measurements were made in a chamber in which the temperature gradient was produced by one set of electrically heated wires and the transverse heat transport was determined by a second set of electrically heated wires. The test procedure is described. The measurements were made in oxygen at pressures 1 - 15 mm Hg. The results show that δ_{odd} (the relative change in the heat capacity due to the odd effect) is a function of

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ACC NR: AP7001341

H/p (H = field intensity, p = pressure). A plot of ϵ_{odd} vs. H/p has two maxima, one corresponding to the odd effect due to inelastic oxygen-molecule collisions accompanied by a change in the projection of the electron spin on the angular momentum, and the other to the elastic collisions. The locations of both maxima agree well with the theoretical predictions. The maximum value of ϵ_{odd} is of the order of 10^{-4} . The odd effect differs with the gas used, showing a monotonic growth in the case of N₂, up to a maximum approximately equal to that for oxygen. No effect was observed for argon. Tests on other gases are planned. The authors thank I. K. Kikoin, Yu. M. Kagan, L. A. Maksimov, Yu. A. Mikhaylova, and V. D. Borman for a useful discussion, and V. I. Nikolayeva and N. Ya. Anisimov for help in preparing the pickups. Orig. art. has: 3 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 31Aug66/ ORIG REF: 004/ OTH REF: 006

Card 2/2

ACC NR: AP6023958

SOURCE CODE: UR/0318/66/000/003/0020/0024

AUTHOR: Sinitzyn, V. V.; Bakaleynikov, M. B.

ORG: none

TITLE: Some aspects of the properties of plastic silica gel lubricants with a petroleum oil base

SOURCE: Neftepererabotka i neftekhimiya, no. 3, 1966, 20-24

TOPIC TAGS: silica gel, lubricant

ABSTRACT: An attempt was made to begin a systematic study of the effect of basic compounding and process factors on the properties of silica gel lubricants. Three samples of lubricants were prepared from MVP oil, industrial 12 oil, and a mixture of aviation MK-22 oil and winter diesel fuel by homogenizing suspensions of oils and 10 wt. % SiO₂. The viscosity, shearing strength, and colloidal stability of the lubricants were measured. An increase in the homogenization time was found to affect the properties of the silica gel lubricants substantially. The maximum shearing strength was observed at 50°; both a rise and a drop of temperature decreased the strength markedly. A mechanism is proposed to account for this very unusual behavior. The effect of the nature and viscosity of the dispersion medium on the properties of silica gel lubricants prepared from the various petroleum oils was determined. Orig. art. has: 4 figures and 1

Card 1/2

UDC: 665.4-4-405:661.183.7001.5:621.45

ACC NR: AP6023958

table.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 004

Card 2/2

ACC NR: AP7002391

SOURCE CODE: UR/0020/66/171/005/1145/1147

AUTHOR: Sinitsyn, V. V.; Prokopchuk, V. A.; Ishchuk, Yu. L.

ORG: none

TITLE: Effect of free alkalis and acids on the structure and properties of hydrated calcium lubricants

SOURCE: AN SSSR. Doklady, v. 171, no. 5, 1966, 1145-1147

TOPIC TAGS: soap, lubricant property, grease

ABSTRACT: A study of the effect of free bases and acids on the structure and properties of hydrated Ca-lubricants was carried out on a lubricant thickened with soaps of mixtures of stearic (HSt) and oleic (HOL) acids taken in the proportion of 1:3. Electron photomicrographs of the structure of the lubricants showed that on passing from weakly acidic and neutral lubricants to alkaline ones, a regular increase in the number of flat, band-shaped crystallites is observed with increasing alkalinity. The influence of basicity (acidity) on the structure of hydrated Ca-lubricants corresponds to changes in their volume-mechanical properties. The greatest thickening effect is obtained with a concentration of 0.12% NaOH in the lubricant, which then has the maximum strength and viscosity. Its dispersed phase consists of a combination of band-shaped and twisted fibers of soap. It is shown that the basicity of hydrated Ca-lubricants should not exceed 0.15% NaOH. On the other hand, the presence of excess

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UDC: 621.892.5

ACC NR: AP7002391

organic acids (up to 0.5% NaOH) has no adverse effect on the properties of the lubricants. To obtain the maximum thickening effect, greases containing from 0.04 to 0.12% NaOH should be prepared. The paper was presented by Academician Rebinder, P. A., 23 Mar 66. Orig. art. has: 2 figures and 1 table.

SUB CODE: 07// SUBM DATE: none/ ORIG REF: 007

4,
Card 2/2

ACC NR: AP7009659

SOURCE CODE: UR/0386/67/005/004/0105/0108

AUTHOR: Borman, V. D.; Gorelik, L. L.; Nikolayev, B. I.; Sinitayn, V. V.

ORG: none

TITLE: Influence of alternating electric field on transport phenomena in polar gases

SOURCE: Zhurnal eksperimental'noy i toereticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 5, no. 4, 1967, 105-108

TOPIC TAGS: transport phenomenon, polar gas, electric field, thermal conduction

ABSTRACT: This is a continuation of earlier experiments (Pis'ma ZhETF v. 3, 145, 1966), which have shown that the thermal conductivity coefficient (ϵ) of polar gases with tetrahedral molecules does not depend on the field frequency (f) up to 20 kHz. The present paper reports the results of an investigation of the dependence of ϵ on f in a wide range of f at room temperature, $p \approx 0.2 - 1$ mm Hg, and $E \approx 30 - 100$ v/cm. The setup used for the investigation is similar to that described earlier. The influence of the alternating electric field on the thermal conductivity of the gas was assessed with the aid of the quantity ϵ_f/ϵ_0 , where ϵ_f and ϵ_0 are the values of ϵ at frequencies f and 50 Hz, respectively. Under the experimental conditions ϵ_f/ϵ_0 decreases noticeably when f changes from 50 Hz to 2 MHz. An additional investigation of the dependence of ϵ_f/ϵ_0 on f/E for two values of E/p showed that within the limits of experimental accuracy the value of ϵ_f/ϵ_0 is determined by only one parameter - the ratio f/p . This result can be explained by the fact that at least in the investi-

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ACC NR: AP7009659

gated range of E , p , and f , the relative decrease of ϵ with increasing f is determined only by the ratio of the time of molecule precession in one direction to the time between molecule collisions. It can be assumed, however, that in general ϵ_f/ϵ_0 is determined by two ratios of these frequencies. A similar influence of an alternating magnetic field on the thermal conductivity of oxygen was observed. The authors thank I. K. Kikoin for a stimulating discussion and valuable advice, V. Kh. Volkov for interest in the work, Yu. M. Kagan, L. A. Maksimov, and Yu. A. Mikhaylova for useful discussions, and V. I. Nikolayev for help with the experiments. Orig. art. has: 3 figures and 2 formulas.

SUB CODE: 20/ SUBM DATE: 30Jul66/ ORIG REF: 002/ OTH REF: 002

Card 2/2

SNARSKIY, A.N.; SINITSYN, V.Ya.

Methods of determining the permeability of sands on the basis of
core samples. Azerb.neft.khoz. 35 no.7:4-6 J1 '56. (MLRA 9:12)
(Permeability) (Oil sands)

SINITSYN, V.Ya.

Taking into consideration the nonuniformity of reservoir rocks in
hydrodynamic calculations of the development of oil fields. Neft.
(MIRA 17:12)
i gaz. prom. no.4:44-46 O-D '63.

1. Ukrainskiy nauchno-issledovatel'skiy geologorazvedocinnyy institut,
L'vov.

SINITSYN, V.Ya.

Effect of the uneven permeability of producing horizons of
a number of Ukrainian fields on oil recovery and the nature
of water encroachment. Trudy UkrNIGRI no.7:156-165 '63.
(MIRA 19:1)

SINITSYN, V.Ya.; LYCHAK, Z.K.

Considering the nonuniformity of reservoirs in the
determination of oil recovery and the nature of water
encroachment. Trudy UkrNIGRI no.7:166-170 '63. (MIRA 19:1)

IESHCHINSKIY, A.A.; SINITSYN, V.Ya.; CHEKALYUK, F.B.

Present status of ~~am~~ prospects for the development of the
Dolina oil field. Geol. nefti i gaza 7 no.10:39-43 O '63.
(MIRA 17:10)
1. Ukrainskiy nauchno-issledovatel'skiy geologorazvedochnyy
institut.

SINITSYN, YA. I.

Potatoes

Methods for the improvement of varieties of
potato seedlings in the forest zones and steppe
forest zones of European Russia. Agrobiologiya
no. 6, 1951. Kandidat sel'skokhozyaystvennykh nauk

SO: Monthly List of Russian Accessions, Library of Congress, May 1952 1953, Uncl.

L 23042-65 EWT(m) IJP(c)
ACCESSION NR: AP5002311

S/0053/64/084/004/0727/0729

AUTHOR: Skripov, V. P.; Sinitsyn, Ye. N.

TITLE: Experiments with superheated liquid

SOURCE: Uspekhi fizicheskikh nauk, v. 84, no. 4, 1964, 727-729

TOPIC TAGS: superheat, methane, pentane, nucleate boiling, bubble chamber 19

ABSTRACT: The author indicates that the question of degree of superheat attainable in a vapor is not discussed in textbooks, and the very possibility of a prolonged existence of highly superheated liquids is not well known, so that it would be useful to introduce appropriate laboratory experiments in the physics curriculum. Apparatus used to this end at the Physicotechnical Department of the Ural Polytechnic Institute, both for research and for student laboratory exercises, is described. The apparatus is shown in Fig. 1 of the enclosure. It is used to superheat a saturated hydrocarbon of the methane series in the form of small droplets imbedded in sulfuric acid. Droplets of diameter 0.1--0.5 mm are superheated and made to float upward in sulfuric acid. When a definite temperature is reached, the superheated droplets become unstable and evaporate ex-

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L 23042-65

ACCESSION NR: AP5002311

plosively, with the resultant characteristic noise clearly heard in the lecture room. By introducing a thermocouple at the position of the explosion it is possible to determine with sufficient accuracy the corresponding temperature of the medium and consequently the temperature of the droplets. More detailed information on the attainable superheating of the liquid can be obtained by bringing the droplets to rest at a given temperature. The procedure for this is also described. The apparatus can also be used to determine the lifetime of droplets under the action of gamma radiation in the sensitive zone of a superheated liquid. Experiments of this kind are similar to investigations of the density of tracks of ionizing particles in bubble chambers. The performance of such an experiment is described. Orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 01

SUB CODE: GP'

NR REF SOV: 005

OTHER: 001

Card 2/3

L 23042-65
ACCESSION NR: AP5002311

ENCLOSURE: 01

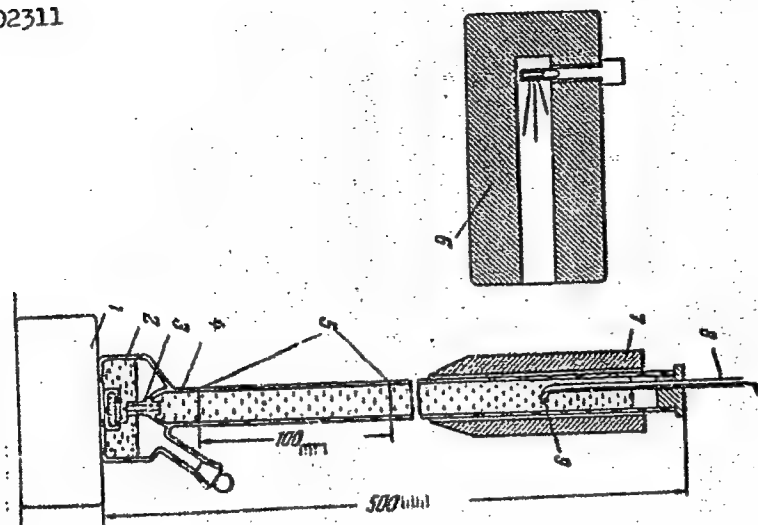


Fig.1: Apparatus scheme for droplets life determination of superheated liquid.

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SKRIPOV, V.P.; SINITSYN, Ye.N.

Experiments with superheated liquids. Usp. fiz. nauk 84 no.4:
727-728 D '64 (MIRA 18:1)

L 21988-66 EWT(1)/EPF(n)-2/ETC(m)-6 WW/GG

ACCESSION NR: AP5025986

UR/0294/65/003/005/0722/0726

AUTHOR: Skripov, V. P.; Pavlov, P. A.; Sinitsyn, Ye. N.

TITLE: ^{21, 44, 55} Boiling of a liquid in pulsed heating. ^{21, 44, 55} 2. Experiments with water, alcohols, n-hexane, and nonane.

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 5, 1965, 722-726

TOPIC TAGS: heating, ~~pulse generator~~, boiling, ~~platinum~~, water, alcohols, hydrocarbons, ~~test chamber~~, ~~temperature instrument~~

ABSTRACT: The limit of the sudden boiling of a series of liquids was determined by pulsed heating with a thin platinum wire. In all cases, the measuring chamber was at room temperature. Experiments at pressures above atmospheric were made in a specially constructed chamber (cross section view shown). The cylindrical brass body (outside diameter 60 mm, inside diameter 32 mm, height 67 mm) has two sockets for screwing in automobile spark plugs. On each plug is mounted a platinum wire 5-7 mm long and 0.02 mm in diameter. The wires are connected to the working arms of a measuring bridge scheme. The opposite end of the chamber is closed by a flange with a device for introducing gas from a cylinder at the desired pressure. The working chamber has a volume of about 12 cm³. The pres-

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L 21988-66

ACCESSION NR: AP5025986

sure on the gas side of the system is measured with a spring type manometer calibrated up to 250 kg/cm². Experimental results for methyl, ethyl, and butyl alcohols and for nonane are shown in tabular form. Experimental values of t^* (temperature of the start of sudden boiling at the wire) are shown graphically, for a pulse duration of 3×10^{-4} sec. Further tables show characteristic values for n-hexane at different pressure, and the limit of sudden boiling for water as a function of the pressure. At atmospheric temperature the effective frequency for nucleation is approximately $10^{13} \text{ cm}^{-3} \text{ sec}^{-1}$. This corresponds to a boiling temperature of 310C, while in the experiment t^* was found to be 250 C (pulse duration 3×10^{-5} sec). Use of longer pulse durations leads to still lower values of t^* and at a pulse duration greater than 3×10^{-4} sec, the boiling picture becomes irregular. For other liquids and for water, at high pressures, the experimental results do not depend on the pulse duration in the interval 10^{-3} to 10^{-4} , nor on the power supplied at a given pulse duration. Orig. art. has: 4 figures and 4 tables

ASSOCIATION: Ural'skiy politekhnicheskii institut im. S. M. Kirova

(Ural Polytechnic Institute)

SUBMITTED: 04Jul54

ENCL: 00

SUB CODE: 20

NR REF SQV: 007

OTHER: 004

Card 2/2

SINITSYNA, A. A.

SINITSYNA, A.A.: "Changes in the respiratory function of patients with pulmonary tuberculosis under sanitarium-climate treatment on the southern coast of the Crimea." Crimean State Medical Institute named after I. V. Stalin. Yalta, 1956. (Dissertation for degree of candidate in Medical Sciences).

SO: Knizhnaya letopis' No 22, 1956

110

P.A.

Effect of pantothenic acid deficiency and B₆-avitaminosis on synthesis of glutathione in rat liver slices. A. L. Sinitayna. Doklady Akad. Nauk S.S.S.R. 73, 1247-9(1960). Pantothenic acid deficiency somewhat lowers liver glutathione and severely restricts its synthesis in liver slices; addn. of pantothenic acid rapidly corrects the condition. B₆-avitaminosis does not disrupt glutathione synthesis. This corresponds to the concept of the acid as a coenzyme in biosynthesis of peptide links. G. M. Kosolapoff